REMARKS

The Office Action of September 9, 2004 has been received and its contents carefully considered.

Claims 1 to 19 are all the claims pending in the application, prior to the present amendment.

The Examiner has indicated that claims 2 to 4, 6, 7, 9, 11 to 13, 16 and 17 contain allowable subject matter, and would be allowed if rewritten in independent form.

The Examiner states that claims 3 to 13 have been interpreted to mean that the non-magnetic undercoat layer is formed from the specified alloy and has the specified composition.

In other words, the Examiner states that she is interpreting claim 3 to mean that claim 3 requires that the layer A is formed from a Cr-Ta-based alloy, and that the alloy has the claimed Ta content.

Similarly, the Examiner is interpreting each of claims 3 to 13 to mean that these claims require that the layer A or layer B contains the recited alloy.

In response, applicant has amended claims 3 to 13 to specifically state that the magnetic recording medium contains the alloys named in these claims.

Claims 16 to 18 have been rejected under the second paragraph of 35 U.S.C.§ 112.

The Examiner states that claim 16 contains the recitation "layer C" in line 3. The Examiner states that there is insufficient antecedent basis for this recitation because claim 16 depends from claim 1 or claim 2, and only claim 2 includes layer C.

In response, applicant has amended claim 16 to delete reference to claim 1, so that claim 16 refers only to claim 2 which recites layer C. In addition, applicants has added new claims 20, 21 and 22 which are similar to claims 16 to 18, but which depend from claim 1 only, and which do not refer to layer C.

In view of the above, applicant submits that claims 16 to 18 comply with the requirements of the second paragraph of 35 U.S.C. § 112 and, accordingly, requests withdrawal of this rejection.

Claims 1, 15, 18 and 19 have been rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent application publication 2003/0124389 to Yoshida et al.

Applicant submits that Yoshida et al do not anticipate claims 1, 15, 18 and 19 as amended above and, accordingly, requests withdrawal of this rejection.

The present invention as set forth in claim 1 is directed to a magnetic recording medium comprising a non-magnetic substrate, a non-magnetic undercoat layer, a magnetic layer, and a protective film, the layers and film being successively formed on the substrate, wherein the non-magnetic undercoat layer has a multi-layer structure formed of at least two layers and contains a layer A formed of a material selected from the group consisting of a Cr-Ta alloy, a Cr-Nb alloy, a Cr-Ti alloy, a Cr-Zr alloy, and a Cr-Hf alloy, and a layer B formed of a material selected from the group consisting of a Co-W alloy, a Co-W-B alloy, a Co-Mo alloy, a Co-Mo-B alloy, a Co-W-Mo alloy, and a Co-W-Mo-B alloy, in which the layers A and B arc provided in this order from the non-magnetic substrate.

The Examiner states that Yoshida et al disclose a magnetic recording medium having a seedlayer or first intermediate layer formed from a Cr alloy, such as CrTi, a second non-magnetic intermediate layer formed from CoCrMo, a magnetic layer formed thereon from CoCrTa, CoCrPt, or CoCrPtTa, for example, and a protective overcoat. The Examiner particularly refers to paragraphs [0030], [0031], [0034], [0035] and [0036] of Yoshida et al.

Applicant does not agree that the disclosure of Yoshida et al anticipates claim 1.

In particular, claim 1 as amended above requires a layer B formed from a material selected from the group consisting of a Co-W alloy, a Co-W-B alloy, a Co-Mo alloy, a Co-Mo-B alloy, a Co-W-Mo alloy and a Co-W-Mo-B alloy.

Yoshida et al do not disclose such an alloy.

The Examiner states that Yoshida et al disclose a CoCrMo alloy, but this alloy would not satisfy the recitations of the layer B alloy of claim 1. Applicant assumes that the Examiner is interpreting the term "Co-Mo-based alloy" that appeared in original claim 1 for layer B to be any alloy which contains Co and Mo, and that the CoCrMo alloy of Yoshida et al, therefore, satisfies the CoMo based alloy of claim 1. Applicant submits, however, that it is clear from the present specification that the term "-based alloy" as used in claim 1 was not intended to open the alloy to the inclusion of unnamed components. In order to further clarify this point, applicant has amended the claims to delete the term "-based alloy". Applicant submits that since the term "-based" has been deleted from all the alloys recited in the claims, one of ordinary skill in the art would interpret the alloys as containing only the recited alloy elements.

In view of the above, applicant submits that claims 1, 15, 18 and 19 are not anticipated by Yoshida et al and, accordingly, requests withdrawal of this rejection.

Claim 5 has been rejected under 35 U.S.C. § 103(a) as obvious over the Yoshida et al published patent application.

Applicant submits that Yoshida et al do not render obvious the subject matter of claim 5 and, accordingly, requests withdrawal of this rejection.

Claim 5 recites a layer A that contains a CrTi alloy having 25% to 50 at % Ti.

The Examiner states that Yoshida et al disclose all of the recitations of claim 5, except for the amount of Ti present in the CrTi undercoat. The Examiner then refers to paragraph [0042] of Yoshida et al, and states that this paragraph teaches it is known to adjust the lattice spacing between the seedlayer and first intermediate layer by adding an element, such as Ti, to the Cr base of the first intermediate layer. The Examiner then concludes that "Thus, the amount of Ti added to the CrTi alloy layer is a result effective parameter that affects lattice matching between the seedlayer and the first intermediate layer. As such it would have been obvious to optimize the amount of Ti added...".

Claim 5 is a dependent claim and, thus, the above arguments for claim 1 also apply to claim 5.

Further, applicant disagrees with the conclusion that the Examiner has drawn from the teachings in paragraph [0042] of Yoshida et al.

Thus, paragraph [0042] states that it is desirable to add an element, such as Ti, when using a Cr-based alloy for the first intermediate layer of the magnetic recording medium of

Yoshida et al. This disclosure in Yoshida et al merely requires the presence of an additional element, and does not indicate what amount of the element is necessary to adjust the lattice spacing.

Further, there is absolutely no teaching or suggestion that the amount should be 25 to 50 %. The only example in Yoshida et al of the addition of an element to the first intermediate layer is in paragraph [0047], where Yoshida et al disclose a Cr90Mo10 first intermediate layer 4. Thus, in this intermediate layer, 10% of an additional element was added. There is no teaching or suggestion that the amount should be 25 to 50%.

In view of the above, applicant submits that claim 5 is patentable over Yoshida et al and, accordingly, request withdrawal of this rejection.

Claim 1, 8, 10, 14, 15, 18 and 19 have been rejected under 35 U.S.C. § 103(a) as obvious over Chen et al in view of Yoshida et al.

Applicant submits that Chen et al and Yoshida et al do not render obvious the subject matter of these claims and, accordingly, requests withdrawal of this rejection.

The Examiner argues that Chen et al disclose a magnetic recording medium having a Cr alloy underlayer, a CoCrW or CoCrMo magnetic underlayer, a Co alloy magnetic layer and a protective overcoat. The Examiner states that Chen et al do not disclose the use of specific Cr alloys claimed as the non-magnetic layer in the present claims, but instead only disclose the use of CrW or CrV underlayer.

The Examiner cites Yoshida et al for showing the equivalence of CrV, CrW and CrTi underlayers for use under CoCr non-magnetic intermediate layers. The Examiner argues that it

would have been obvious to substitute a CrTi layer as taught by Yoshida et al for the Cr alloy materials taught by Chen et al.

In this rejection, the Examiner apparently considers that the CoCrCw and CoCrMo magnetic underlayers in Chen et al satisfy the recitations of claim 1 of a layer B formed of a material selected from the various alloys for layer B. Layer B, however, does not recite a CoCrW or CoCrMo non-magnetic underlayer.

Applicant again assumes that the Examiner is taking the position that the term "CoMo-based alloy" for layer B covers the CoCrMo non-magnetic underlayer disclosed in Chen et al. Similarly, it appears that the Examiner is taking the position that the "Co-W-based alloy" is satisfied by the CoCrW alloy disclosed in Chen et al.

For the same reasons that applicant discussed above in connection with the anticipation rejection based on Yoshida et al, applicant submit that one of ordinary skill in the art would understand that the CoW alloy in claim 1 does not cover a CoCrW alloy, and that the CoMo alloy in claim 1 does not cover the CoCrMo alloy of Chen et al.

With respect to claims 8 and 10, the Examiner states Chen et al teach the addition of W or Mo to a CoCr alloys expand the lattice constant of the non-magnetic interlayer. See column 7, lines 39 to 41. The Examiner argues that, therefore, it would have been obvious to optimize the amount of W or Mo added to the CoCr interlayer of Chen et al.

Claims 8 and 10 depend from claim 1. Accordingly, applicant's above arguments for the patentability of claim 1 over Chen et al in view of Yoshida et al also apply for claims 8 and 10.

Further, Chen et al, at column 7, lines 39 to 41 merely disclose that the presence of W or Mo expands the lattice constants, but do not indicate the amount of the element that should be used to adjust the lattice spacing, and do not contain any teaching or suggestion that the amount of the addition should be such to provide an alloy containing 30 to 50% W or Mo.

In view of the above, applicant submits that Chen et al and Yoshida et al do not defeat the patentability of the above claims and, accordingly, requests withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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